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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/569,832	12/07/2006	Tamami Koyama	Q77287	5394

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WASHINGTON, DC 20037

EXAMINER
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CLARK, GREGORY D

ART UNIT	PAPER NUMBER
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1786

NOTIFICATION DATE	DELIVERY MODE
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01/21/2011

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

sughrue@sughrue.com  
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USPTO@SUGHRUE.COM

<b>Office Action Summary</b>	<b>Application No.</b> 10/569,832	<b>Applicant(s)</b> KOYAMA ET AL.	
	<b>Examiner</b> GREGORY CLARK	<b>Art Unit</b> 1786	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 June 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Continued Examination Under 37 CFR 1.114**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/09/2009 has been entered.

### **Double Patenting**

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-11 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1 of US 7,250,226. Although the conflicting claims are not identical, they are not patentably distinct from each other because claim 1 of US 7,250,226 discloses a polymeric phosphorescent compound obtained by the copolymerization of a phosphorescent monomer unit and a hole transporting monomeric unit which is composed of triphenylamine or triphenylamine derivatives. Triphenylamine represents the genus from which the triphenylamine derivative species in applicant's claim 2 was derived. The species claimed in the instant application is merely a bis-triphenyl amine structure, a doubled structure.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have selected a bis-triphenyl phosphine structure for the generic triphenyl phosphine structure claimed in 7,250,226 for the hole pendant group, as it is merely doubled, bis, triphenyl amine structure where one would expect the properties of the bis amine to be additive over a single amine in functioning as a hole transport material.

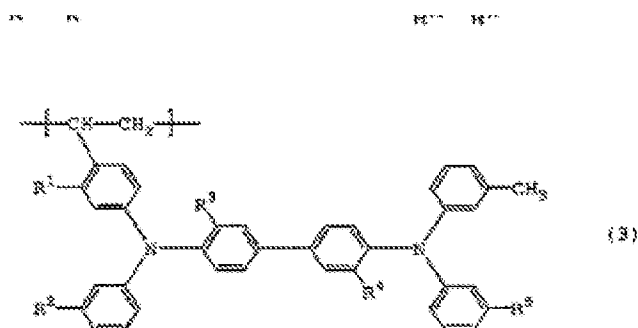
### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

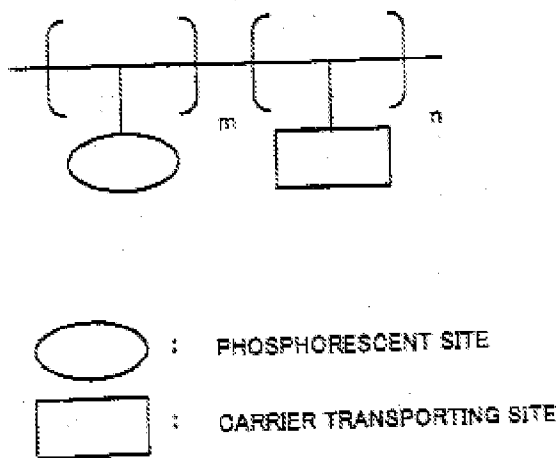
1. **Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokito (US 2003/0091862) in view of Junji (JP 11-292829).**

2. **Regard Claim 1**, applicant claims a phosphorescent polymer compound containing a phosphorescent monomer unit and a monomer unit represented by the Formula 3

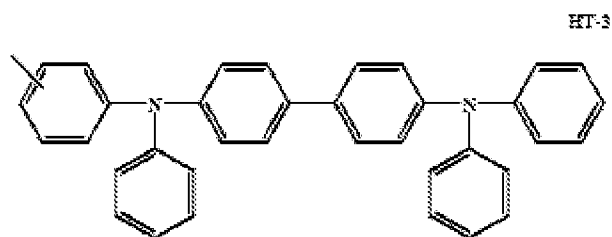


Wherein R1 to R5 is H or Me and at least one of R1 or R2 is Me.

Tokito discloses an organic light-emitting device, contains a phosphorescent copolymer composed of a phosphorescent repeating and a carrier transporting repeating unit (abstract). See diagram below (sheet 1):

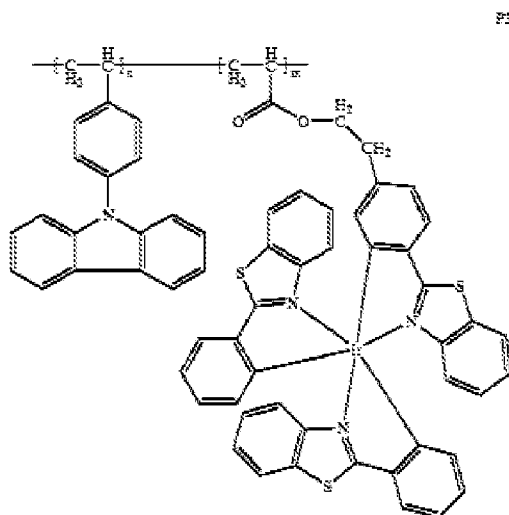


Tokito discloses that the carrier transporting repeating unit can be a hole transporting material represented by Formula HT3 (page 6).

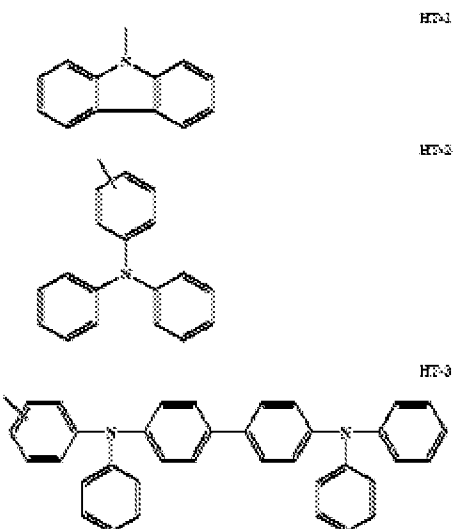


Tokito shows Formula P3 (page 7) as a copolymer with a hole transporting side chain moiety attached directly to a polymerizable vinyl group of the main polymer chain. P3 (below) is an example of a copolymer composed of a side chain phosphorescent metal complex monomer and a hole transporting side chain monomer (HT-2) represented by the carbazole material (paragraph 95).

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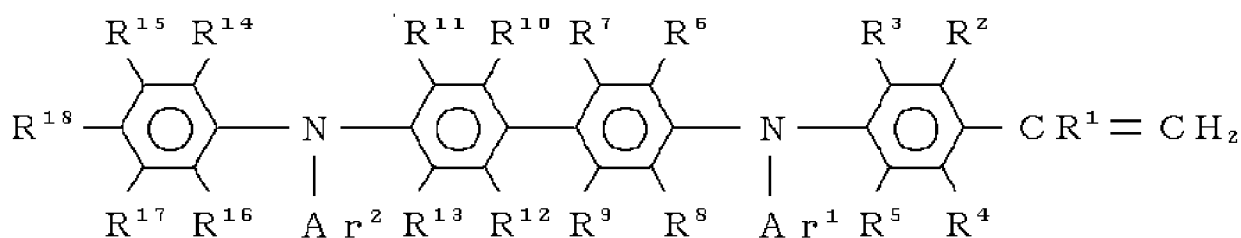
A list of hole transporting the side chain monomers (i.e. HT-3) are disclosed that are equivalent to the carbazole material (HT-2) disclosed in P3 is disclosed (paragraph 90) (see below):



Formula P3 shows a vinyl repeating unit in the hole transporting monomer (HT-2). It would be obvious to use Formula HT-3 in an analogous sense with a vinyl repeating group.

Formula HT3 shows the basic parent structure which reads on applicants' Formula 3 but fails to show the specific substituent groups (Me).

Junji discloses an arylamine-containing vinyl monomer used in an OLED (abstract). The arylamine-containing vinyl monomer has hole transporting properties (paragraph 5) and can be represented by Formula J-1 (paragraph 6):



$R^1 - R^{18}$  can be a hydrogen atom, an alkyl group, and an amino group.  $Ar^1$  and  $Ar^2$  are aryl groups which may have a substituent.

The examiner interprets this to mean that the substituents of  $Ar^1$  and  $Ar^2$  are inclusive of alkyl groups (Me).

Formula J-1 reads on applicants' Formula 3, where  $Ar^1$  can be substituted with a para-Me group;  $R^{18}$  can be a para-Me group;  $R^8$  and  $R^{11}$  can be hydrogen atoms.

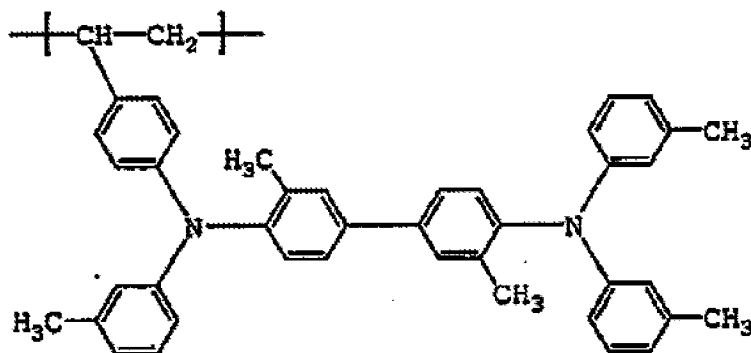
It would have been obvious to one of ordinary skill in the art at the time of the invention to have made a variety of compounds based on the guidance of Junji which would have included the substitution mentioned above which reads on the instant limitations, absent unexpected results.

The arylamine-containing monomers of Tokito differ from the arylamine-containing monomer of Junji only by the substituent groups. When  $R^1 - R^{18}$  are hydrogen atoms and  $Ar^1$  and  $Ar^2$  are unsubstituted phenyl groups Formula HT-3 and Formula J-1 represent the same material. The two monomeric materials are both used in OLEDs as hole transporting materials and would be expected to show similar electronic properties. As such, these conjugated aromatic amine materials are viewed as readily exchangeable functional equivalent materials that would be expected to function in the same capacity in an OLED.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have exchanged Formula HT-3 with Formula J-1 which reads on the instant limitations since these materials would be expected to have similar properties, absent unexpected results.

3. **Regarding Claim 2**, Tokito in view of Junji teach the invention of claim 1. Tokito's Formula HT-3 can be replaced with Junji's Formula J-1 (reads on applicants' Formula 3) as discussed above.

Applicant claims a phosphorescent polymer compound containing a phosphorescent monomer unit and a monomer unit represented by the Formula 4 (below):



Formula J-1 (above) reads on applicants' Formula 4, where Ar1 can be substituted with a para-Me group; R18 can be a para-Me group; R8 and R11 can be a Me groups (alkyl).

It would have been obvious to one of ordinary skill in the art at the time of the invention to have made a variety of compounds based on the guidance of Junji which would have included the substitution mentioned above which reads on the instant limitations, absent unexpected results.

4. **Regarding Claims 3 and 4**, Tokito in view of Junji teach the invention of claim 1.

Tokito also discloses that the polymer can contain electron transporting moieties (per claim 3) which include monovalent groups of oxadiazole derivatives (structure ET1 and ET2), triazole derivatives (structure ET4), or imidazole derivatives (structure ET3) (page 6) (per claim 4).

5. **Regarding Claims 5 and 6**, Tokito in view of Junji teach the invention of claim 1.

Tokito shows copolymer P3 above. The carbazole hole transporting unit can be

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replaced with Formula HT-3 which can be replaced with Junji's Formula J-1 which reads on applicants' Formulas 3 and 4 as discussed above.

Tokito shows Formula P3 (above) as a copolymer with a hole transporting side chain moiety attached directly to a polymerizable vinyl group of the main polymer chain and a phosphorescent side chain moiety (per claim 5) is a transition metal complex (per claim 6) that is connected via a polymerizable vinyl group to the main polymer chain.

6. **Regarding Claim 7**, Tokito in view of Junji teach the invention of claim 1.

Tokito discloses an organic light-emitting device having one or more organic polymer layers interposed between an anode and a cathode, at least one layer of the organic polymer layers includes the phosphorescent compound (paragraph 68).

7. **Claims 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokito (US 2003/0091862) in view of Junji (JP 11-292829) and Hatwar (US 6,127,004).**

8. **Regarding Claims 8-11**, Tokito in view of Junji teach the invention of claim 7.

Tokito discloses a phosphorescent polymer compound containing a phosphorescent monomer unit but fails to teach an anode subjected to UV ozone irradiation treatment or high-frequency plasma treatment.

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Hatwar discloses that anode contact can be significantly improved via oxygen (gas) (per claims 9 and 11) plasma treatment (per claim 8) and the resulting device can be operated at low voltages, and exhibits good stability (column 2, 31-35).

Hatwar also discloses that depositing a fluorocarbon layer (per claim 10) between the anode and the hole transport layer of the OLED decreases the drive voltage which significantly enhanced the operation stability of the device (column 3, lines 39-42).

As decreasing the drive voltage and enhancing the operation stability of the device are desirable features to improve the performance of the OLED, it would have been obvious to a person of ordinary skill in the art at the time of the invention to have applied the anode treatment methods disclosed by Hatwar (reads on the instant limitations) to the anode of the OLED of Tokito to produce a device with improved performance, absent unexpected results.

### **Response to Argument**

The examiner has applied a new reference Junji who teaches hole transporting materials represented by arylamine-containing vinyl monomers with substituents that include alkyl groups and spacer groups that read on the instant limitations.

As a result, applicants' previous arguments based on Tokito not teaching the alkyl substituents and spacer groups in the aromatic amine monomer will not be addressed in this office action.

### **Conclusion**

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to GREGORY CLARK whose telephone number is (571)270-7087. The examiner can normally be reached on M-Th 7:00 AM to 5 PM Alternating Fri 7:30 AM to 4 PM and Off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 1786

GREGORY CLARK /GDC/  
Examiner  
Art Unit 1786